CLAIMS

What is claimed is:

1. An apparatus, comprising:

a reflective element having a reflective surface; and

an optical feed capable to receive a light signal and mounted to the reflective element, the optical feed positionable to direct the light signal onto the reflective surface of the reflective element, the reflective element shaped to reflect the light signal directed from the optical feed towards a remote location facing the reflective element.

2. The apparatus of claim 1 wherein the optical feed comprises an optic fiber extending out from the reflective element, the optic fiber having a terminal end, the optic fiber being configured to emit the light signal from the terminal end and to direct the light signal emitted from the terminal end onto the reflective surface of the reflective element.

3. The apparatus of claim 2 wherein the terminal end of the optic fiber resides adjacent to a focal plane of the reflective element.

4. The apparatus of claim 2 wherein the optical feed further comprises an endpoint element coupled to the terminal end of the optic fiber, the endpoint

element being capable to beam-form the emitted light signal or to wavelength filter the emitted light signal.

5. The apparatus of claim 1 wherein the optical feed is mounted to the reflective element via a mounting element adjustable about a plurality of axes.

6. The apparatus of claim 5 wherein the mounting element comprises a fiber positioner having a magnetic fluid cavity, the fiber positioner being capable to adjust a position and an orientation of the optical feed.

7. The apparatus of claim 6 wherein the positioner further includes a position sensor system being capable to provide feedback information to the fiber positioner.

8. The apparatus of claim 1 wherein the reflective element comprises a concave mirror.

9. The apparatus of claim 1, further comprising a plurality of optical feeds mounted to the reflective element.

10. The apparatus of claim 9, further comprising a light source to generate the light signal, the light source optically coupled to the plurality of optical feeds.

11. The apparatus of claim 1 wherein the reflective element is further capable to receive light sent from the remote location and to reflect this received light towards the optical feed to be received by the optical feed.

12. The apparatus of claim 11 further comprising an optical receiver coupled to the optical feed, the optical receiver capable to receive the light sent from the remote location.

13. An apparatus, comprising:

a light emitter to emit a light signal; and

a refractive lens assembly configured to receive the light signal emitted from the light emitter and to refract the light signal to a remote location facing the refractive lens assembly.

14. The apparatus of claim 13, further comprising:

a support frame; and

a mounting element to adjustably mount the light emitter to the support frame.

15. The apparatus of claim 14 wherein the light emitter comprises an optic fiber tip.

16. The apparatus of claim 15 wherein the support frame is curved to allow the optic fiber tip to be positioned adjacent to a focal plane of the refractive lens assembly.

17. The apparatus of claim 16 wherein the refractive lens assembly comprises a fisheye lens assembly.

18. The apparatus of claim 14 wherein the mounting element comprises a fiber positioner adjustable about a plurality of axes.

19. The apparatus of claim 18 wherein the fiber positioner is adjustable about five axes.

20. The apparatus of claim 15, further comprising a plurality of optic fiber tips each configured to direct their emitted light signal towards the refractive lens assembly.

21. The apparatus of claim 13 wherein the refractive lens assembly is further capable to receive light sent from a remote location and to direct this received light towards the light emitter, the light emitter further capable to receive this directed light.

22. The apparatus of claim 21 further comprising an optical receiver coupled to the light emitter, the optical receiver capable to receive the light sent from the remote location.

23. The apparatus of claim 13 wherein the light emitter comprises a uniform intensity generator having an input port optically coupled to receive the light signal and an output port to emit the light signal, the uniform intensity generator configured to emit the light signal with a uniform intensity distribution.

24. The apparatus of claim 23 wherein the uniform intensity generator comprises a transmitter having a first diffractive optical element and a second diffractive optical element, the first diffractive optical element to convert an input light signal having a non-uniform intensity distribution to an output light signal having a uniform intensity distribution, the second diffractive optical element to correct a phase distortion in the output light signal output from the first diffractive optical element.

25. The apparatus of claim 24, further comprising a plurality of transmitters to emit a corresponding plurality of light signals to be received by the refractive lens assembly.

26. A method of optical communication, the method comprising:

generating an optical signal;

coupling the optical signal to an optical feed;

aiming the optical feed;

emitting the optical signal from the optical feed; and

reflecting the optical signal emitted from the optical feed towards an optical receiver.

27. The method of claim 26 wherein aiming the optical feed comprises adjusting the optical feed about a plurality of axes.

28. The method of claim 27 wherein reflecting the optical signal emitted from the optical feed comprises reflecting the signal off a concave mirror.

29. The method of claim 26, further comprising generating a plurality of optical signals and reflecting these optical signals emitted from a corresponding plurality of optical feeds towards corresponding optical receivers.

30. A method of optical communication, the method comprising;

generating an optical signal;

coupling the optical signal to an optical waveguide;

aiming the optical waveguide;

emitting the optical signal from the optical waveguide; and

refracting the optical signal emitted from the waveguide.

31. The method of claim 30 further comprising receiving the refracted signal with an optical receiver.

32. The method of claim 31 further comprising receiving the refracted signal with a plurality of optical receivers.

33. The method of claim 30, further comprising:

generating a plurality of optical signals;

coupling the plurality of optical signals to a plurality of optical waveguides; and

refracting the plurality of optical signals emitted from each optical waveguide.

34. The method of claim 33, further comprising receiving the plurality of refracted optical signals with a plurality of corresponding optical receivers.

35. The method of claim 30 wherein refracting the optical signal emitted from the waveguide comprises directing the optical signal emitted from the waveguide into a fisheye lens assembly.